

second supplement continues the literature of 1899-1904 in reference to dicotyledons from Euphorbiaceae to Sapotaceae.—J. M. C.

**Flora of Winneshiek Co., Iowa.**—SHIMEK<sup>7</sup> has published an account of the plants of one of the counties of Iowa, prefacing the annotated list by a discussion of the forest problem, ornamental plants, forage plants, weeds, and medicinal plants.—J. M. C.

**Eucalyptus.**—The eighth part of MAIDEN'S<sup>8</sup> revision of *Eucalyptus* contains the description, synonymy, range, and affinities of seven species. This series, begun in 1903, now includes twenty-four species.—J. M. C.

**Das Pflanzenreich.**<sup>9</sup>—Part 28 contains the group Calceolarieae of Scrophulariaceae. The three genera are *Porodittia* (1 sp.), *Jovellana* (6 spp.), and *Calceolaria* (192 spp., with 9 new).—J. M. C.

### NOTES FOR STUDENTS

**Apogamy and apospory in ferns.**—Professor FARMER and Miss DIGBY have published<sup>10</sup> the results of their studies of apogamy and apospory in ferns. The forms described are *Lastrea pseudo-mas* vars. *polydactyla* Wills, *polydactyla* Dadds, and *cristata apospora* Druery; *Athyrium Filix-foemina* vars. *clarissima* Jones, *clarissima* Bolton, and *uncoglomeratum* Stansfield; and *Scolopendrium vulgare* var. *crispum* Drummondiae.

In *Athyrium Filix-foemina clarissima* Jones there is no change in the number of chromosomes in passing from the sporophyte to the gametophyte phase of the life-history; and there is no migration of nuclei from one prothallial cell to another. The embryo arises as a bud upon the gametophyte.

In *Athyrium Filix-foemina clarissima* Bolton there is no reduction of chromosomes, no true fertilization, no migration of prothallial nuclei, and the embryo develops from an unfertilized egg.

In *Athyrium Filix-foemina uncoglomeratum* Stansfield the embryo arises in connection with an archegonium, but details were not discovered. The number of chromosomes (about 100) is maintained throughout the life-history and there is no migration of prothallial nuclei.

In *Scolopendrium vulgare crispum Drummondiae* a remarkable condition is described. The number of chromosomes in sporophyte nuclei is about 100, in prothallial nuclei about 70, in archegonial nuclei about 80, and in antheridial

<sup>7</sup> SHIMEK, B., Flora of Winneshiek County. Iowa Geol. Surv. 16:147-211. 1906.

<sup>8</sup> MAIDEN, J. H., A critical revision of the genus *Eucalyptus*. Part VIII. pp. 211-254. pls. 37-40. Sydney: Published by State of New South Wales. 1907. 2s. 6d.

<sup>9</sup> ENGLER, A., Das Pflanzenreich. Heft 28. Scrophulariaceae Antirrhinoideae-Calceolarieae von Fr. Kränzlin. pp. 128. figs. 21 (142). Leipzig: Wilhelm Engelmann. 1907. M6.40.

<sup>10</sup> FARMER, J. BRETLAND, and L. DIGBY, Studies in apogamy and apospory in ferns. Annals of Botany 21:161-199. pls. 16-20. 1907.